Hemogenic endothelium: origins, regulation, and implications for vascular biology.

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Public Summary:

Scientific Abstract:
The study of endothelial development has been intertwined with hematopoiesis since the early 20th century when a bi-potential cell (hemangioblast) was noted to produce both endothelial and hematopoietic cells. Since then, ideas regarding the nature of connection between the vascular and hematopoietic systems have ranged from a tenuous association to direct lineage origination. In this review, historical data that spans hematopoietic development is examined within the context of hemogenic endothelium. Hemogenic endothelium, a specialized endothelial population capable of hematopoiesis, is an emerging theory that has recently gained momentum. Evidence across species and decades are reviewed, as are the possible modulators of the phenomenon, which include pathways that specify definitive hematopoiesis (Runx1), arterial identity (Notch1), as well as physiological and developmental factors.